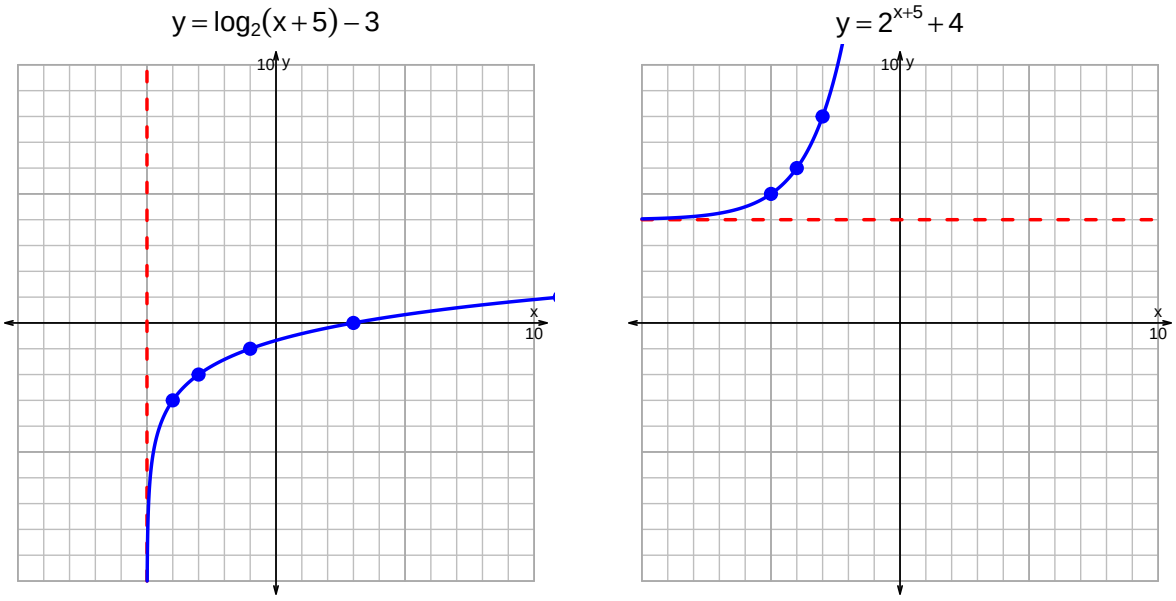
Name: Date:

s18quiz: EXP LOG (Solution v108)

1. Graph $y = \log_2(x+5) - 3$ and $y = 2^{x+5} + 4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{3}{7}\right) \cdot 2^{5t/4}$$

Divide both sides by $\frac{3}{7}$.

$$\frac{11 \cdot 7}{3} = 2^{5t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{11 \cdot 7}{3}\right) = \frac{5t}{4}$$

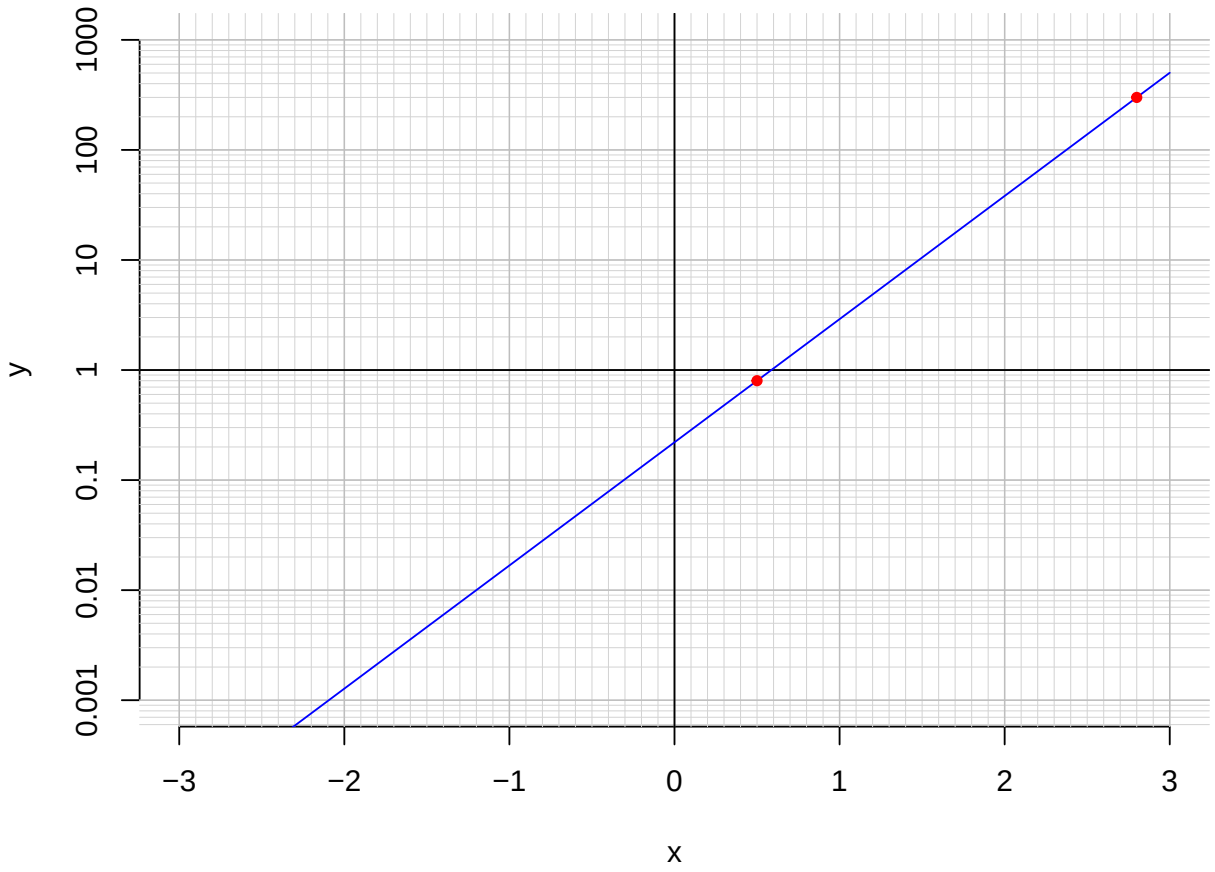
Divide both sides by $\frac{5}{4}$.

$$\frac{4}{5} \cdot \log_2\left(\frac{11 \cdot 7}{3}\right) = t$$

Switch sides.

$$t = \frac{4}{5} \cdot \log_2\left(\frac{11 \cdot 7}{3}\right)$$

3. An exponential function $f(x) = 0.221 \cdot e^{2.58x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.8)$.

$$f(2.8) = 300$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{2.58} \cdot \ln\left(\frac{x}{0.221}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.8)$.

$$f^{-1}(0.8) = 0.5$$